REMARKS

The present Amendment amends claims 2, 4, 5, 7-16, leaves claims 3 and 6 unchanged and cancels claim 1. Therefore, the present application has pending claims 2-16.

Claims 1-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Yonekura (U.S. Patent Application Publication No. 2002/0087730 A1) in view of Pyhalammi (U.S. Patent Application Publication No. 2008/0182559 A1) and Kolsky (U.S. Patent Application Publication No. 2003/0028599 A1). As indicated above, claim 1 was canceled. Therefore, this rejection with respect to claim 1 is rendered moot.

It should be noted that the cancellation of claim 1 was not intended nor should it be considered as an agreement on Applicants part that the features recited in claim 1 are taught or suggested by Yonekura, Pyhalammi or Kolsky. The cancellation of claim 1 was simply intended to expedite prosecution of the present application. Applicants hereby reserve their right to pursue the subject matter as set forth in claim 1 in a continuing application.

This rejection with respect to the remaining claims 2-16 is traversed for the following reasons. Applicants submit that the features of the present invention as now recited in claims are not taught or suggested by Yonekura, Pyhalammi or Kolsky whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe features of the present invention as recited in the claims. Particularly,

amendments were made to the claims to recite that the present invention is directed to a content relay node having a function of routing data packets in an application layer of the International Organization for Standardization/Open Systems Interconnection (ISO/OSI) reference model.

According to the present invention the content relay node includes a receiving unit having a plurality of input ports, a transmitting unit having a plurality of output ports, a data processing unit, a switch unit for connecting said receiving unit, said transmitting unit, and said data processing unit, a plurality of storages having a data storing function, and a routing control unit for controlling said transmitting and switch units.

Further, according to the present invention each of said data packets includes a storage address of the application layer for identifying said plurality of storages on a network and a data attribute, and the receiving unit has means for receiving a data packet, means for extracting the storage address of the application layer and the data attribute from the data packet, means for transferring the data attribute to said data processing unit and the storage address of the application layer said routing control unit, and means for sending the data packet to said switch unit.

Still further, according to the present invention the routing control unit has means for selecting, as a destination of a received data packet, one of the said transmitting unit and said data processing unit on the basis of routing information including the storage address of the application layer and instructing said switch unit to make switching, the storage has means for storing the received data, and the switch unit has means for switching a route according to an instruction from said routing control unit.

Still further yet, according to the present invention the data processing unit has means for storing or transmitting data based on data attribute, and the transmitting unit has means for processing the header of a data packet in accordance with a control signal from said routing control unit and means for transferring the data packet to a neighboring relay node.

Even further still, according to the present invention the content relay node has means for determining a route and constructing a storage routing table (SRT) based on data size of a received data flow and available memory space in the next storage for relay at the time of determining correspondence, to be registered in the SRT, between a destination network storage address (NSA) and the next NSA for relay.

Thus, according to the above description, the present invention relates to data transmission control and a relay node for routing data packets. Routing is achieved using data identification information in an application layer of the data packet in order to efficiently transfer large amounts of data, such as multimedia data in the form of video images and sound files. In particular, the present invention uses a store and forward technique for data packet transmission and a relay node, along with storage addresses in a network of storage units.

More particularly the present invention now more clearly sets forth that the data packets are routed in accordance with a storage address of an application layer of the ISO/OSI reference model for identifying a plurality of storage units on a network. In other words, the content relay node is implemented by a routing control unit having means for selecting a destination

for a packet based on routing information including the storage address of the application layer of the ISO/OSI reference model.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention as now more clearly recited in the claims are not taught or suggested by Yonekura, Pyhalammi or Kolsky whether said references are taken individually or in combination with each other as suggested by the Examiner.

Yonekura relates to a content relay service device having the function of reducing the data amount of network content to be transferred to a user terminal. As suggested by the Examiner at lines 8 -12 of page 3 in the Office Action, Yonekura's content relay service device performs packet routing based on an IP address of the data packet. This includes information such as a HTTP request and HTTP response. Thus, Yonekura discloses a content relay device that is applicable to a conventional IP network which uses IP layer (Layer-3: the network layer) routing technology contrary to that of the present invention as now recited in the claims.

Further, Yonekura proposes an alleged content relay service device for transferring a Web content opened to the public on the Internet while reducing a data amount of the received content in order to save data communication fees to be charged on each user. Although Yonekura merely discloses the alleged content relay service device by element 10 (10a) in Figs. 1 and 2, the Examiner states that most of the subject matter and configuration of the present invention as shown in Fig. 1 of the present application are obvious

from the element 10 taught by Yonekura. Furthermore, the Examiner alleges that the portable telephone sets 20a shown in Figs. 1 and 2 of Yonekura, which are quite independent from the content relay service device, correspond to the input and output ports of the present invention as recited in the claims.

However, Applicants submit that the device having the configuration shown in Fig. 1 of the present application is not obvious from the teachings of Yonekura, even when referring to the Figs. 1 and 2 of Yonekura and the corresponding description.

In the Office Action, the Examiner alleges that the features of claim 8 are obvious from Yonekura in paragraph [0068] thereof. However, Yonekura does not teach or suggest anything even remotely related to the storage routing table (SRT), available memory space in the next storage and the relation between a destination NSA and the next NSA as in the present invention as recited in the claims.

According to conventional routing in the network layer - wherein a route on a network is unconditionally determined in a routing table - there is a tendency for traffic to become concentrated on a specific route and link source usage to become unbalanced. Particularly, this occurs in a case where dense traffic exists in a section on the network. When such occurs there is the possibility of congestion developing or occurrence of a link failure. These types of problems are described in the second paragraph on page 7 of the present application.

The present invention solves the above noted problems by constructing an address system using storage addresses of an application layer of the

ISO/OSI reference model. The application Layer (Layer 7) of the ISO/OSI reference model is higher than the IP layer (Layer 3) of the ISO/OSI reference model. (Attached is an article from Wikipedia describing the OSI reference model for the Examiner's reference and understanding). Thus, data packets can be transferred on a network according to application layer routing independently of IP layer routing. The Examiner's attention is directed to the last paragraph of page 24 of the present application.

In Yonekura there is absolutely no such teaching or suggestion about the application layer routing as in the present invention as recited in the claims.

Thus, Yonekura fails to teach or suggest a content relay node having a function of routing data packets in an application layer of the International Organization for Standardization/Open Systems Interconnection (ISO/OSI) reference model as recited in the claims.

Further, Yonekura fails to teach or suggest that the routing control unit has means for selecting, as a destination of a received data packet, one of the said transmitting unit and said data processing unit on the basis of routing information including the storage address of the application layer and instructing said switch unit to make switching as recited in the claims.

Still further, Yonekura fails to teach or suggest that the switch unit has means for switching a route according to an instruction from said routing control unit as recited in the claims.

Still further yet, Yonekura fails to teach or suggest that the content relay node has means for determining a route and constructing a storage routing table (SRT) based on data size of a received data flow and available

memory space in the next storage for relay at the time of determining correspondence, to be registered in the SRT, between a destination network storage address (NSA) and the next NSA for relay as recited in the claims.

The above described deficiencies of the Yonekura are not supplied by any of the other references of record. Particularly the above described deficiencies of Yonekura are also evident in Pyhalammi and Kolsky.

Pyhalammi describes in paragraph [0023] that a message created by a content/service provider 13 is delivered to a message buffering and scheduling engine 36 of selected Mobile Content Delivery (MCD) system 11 via a layer 7 switch 35, and that the layer 7 switch 35 may redirect the message content to a different MCD system with a lighter network server data activity load.

Kolsky teaches a system that provides an "alias layer" between the application layer of OSI and an entity layer which corresponds to, for example, an email client, a web browser, a telephone handset, etc., so that, for example, alias switching service can receive a pager message from entity A and translate it into email in order to send it to another entity B, as described in paragraph 0021.

Kolsky states in column 0021 thereof that an alias switching device can access a data storage medium to associate an "alias identifier" with an "application identifier", a command and an "application layer address".

As described by referring to FIG. 5, Kolsky proposes to provide an "alias layer" between application layer of the ISO/OSI reference model and an entity layer which corresponds to, for example, an email client, a web browser, a telephone handset, etc. The "alias identifier" represents the

identifier of an entity to be communicated. When entity A initiates communication with entity B, for example, the entity A must provide the alias layer with the alias identifier of the entity B. Attention is directed to paragraph 0044 of Kolsky.

As described by referring to paragraph [0012] of Kolsky, the "application layer address" represents, for example, a telephone number address for voice mail or conferencing application, an email address for TCP/IP email, and a pager address for a pager network. Accordingly, the "application layer address" as used in Kolsky has no relation to "the storage address of the application layer of the ISO/OSI reference model" of the present invention.

In paragraph [0012], Kolsky describes that when an alias identifier is presented, information associated with that alias identifier in the data storage is retrieved and executed by an alias mechanism. The alias mechanism corresponds to an alias switch 1008 shown in FIG.7 of Kolsky and the alias mechanism is installed in a switch server. Attention is directed to paragraph 0048 of Kolsky.

In the paragraph [0021], Kolsky merely proposes that the alias switch 1008 executes the commands retrieved from the data storage and complete connections between two or more applications operated by the two entities A and B. Kolsky does not teach or suggest in this paragraph a routing unit having the same configuration as the present invention as recited in the claims.

As is clear from the above both Pyhalammi and Kolsky there is absolutely no such teaching or suggestion in either reference about the

content relay node having means for determining a route and constructing a storage routing table (SRT) based on data size of a received data flow and available memory space, and the application layer routing as in the present invention as recited in the claims

Thus, each of Pyhalammi and Kolsky, the same as Yonekura, fails to teach or suggest a content relay node having a function of routing data packets in an application layer of the International Organization for Standardization/Open Systems Interconnection (ISO/OSI) reference model as recited in the claims.

Further, each of Pyhalammi and Kolsky, the same as Yonekura, fails to teach or suggest that the routing control unit has means for selecting, as a destination of a received data packet, one of the said transmitting unit and said data processing unit on the basis of routing information including the storage address of the application layer and instructing said switch unit to make switching as recited in the claims.

Still further, each of Pyhalammi and Kolsky, the same as Yonekura, fails to teach or suggest that the switch unit has means for switching a route according to an instruction from said routing control unit as recited in the claims.

Still further yet, each of Pyhalammi and Kolsky, the same as Yonekura, fails to teach or suggest that the content relay node has means for determining a route and constructing a storage routing table (SRT) based on data size of a received data flow and available memory space in the next storage for relay at the time of determining correspondence, to be registered

in the SRT, between a destination network storage address (NSA) and the next NSA for relay as recited in the claims.

Therefore, since each of Yonekura, Pyhalammi and Kolsky fails to teach or suggest the features of the present invention as now more clearly recited in the claims, taking these references individually or combining these references in the manner suggested by the Examiner in the Office Action does not anticipate nor render obvious the claimed invention. Accordingly, reconsideration and withdrawal of the various rejections under 35 USC §103(a) is respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-16.

In view of the foregoing amendments and remarks, Applicants submit that claims 2-16 are in condition for allowance. Accordingly, early allowance of the present application based on claims 2-16 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (520.42914X00).

Respectfully submitted,

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